APPENDIX V
Graphics Guidelines

SIGN GRAPHICS GUIDELINE

These guidelines will help managers at all levels to create wayside exhibits that present information in a professional manner. That will link individual sites into a cohesive whole visually through a consistent design system.

These guidelines are advice, not a detailed manual. But they will give you a greater understanding of the process so that you will avoid or resolve conflicts that can be costly in the long run. They will help you implement information and content suggested in earlier sections of this strategy.

INCLUDED IN THIS GUIDELINE:

- **Design Tips**
- **Design Specifications**
- **Fabrication**
- **Upright or Angled?**
- **Accessibility Standards**

BASIC ELEMENTS OF DESIGN

With the aid of the guideline and its built in flexibility you can explore the possibilities of arranging the basic elements of an interpretive wayside exhibit. Along with simple rules, variations of techniques are explained. Variables in layout, choices of typography and color are given to aid the designer in a more professional presentation.

DESIGN TIPS

Simple techniques can add dimension to an interpretive sign. Offered here are a few basics to help make your wayside presentation more interesting without sacrificing uniformity.

- Text Wraps
- Varying Text Weight
- Background Color
- Background Textures
- SideBars

DESIGN TIPS

TEXT WRAPS

Working well within the framework of the design grid, wrapping text or following an edge around an image is a unique way to add variation and interest to your design. Text fitted closely with the corresponding graphic allows the text to become an extension of the graphic, relating more closely the written word with the image. It can also solve space problems and provide a less blocky appearance to your narrative. Relatively easy to do with computer desk top publishing programs, however, some minor adjustments may have to be made to eliminate clumsy line breaks.

TEXT WEIGHT

Text that has variation can increase readability. By using variations of the same font for subheads and bold faced passages information can be imparted in segments rather than at once in a dense block. Readers may also preview text by reading the essence of the content captured in a few sentences that are typeset in a larger point size or in a different font and placed at the beginning of the text. Quotes can also be used in this manner.

BACKGROUND COLOR

The use of color for the background of Interpretive signs is essential. White backgrounds in most outdoor settings appear too stark and have the tendency to glare.

It is not recommended to use white as a background.

The colors in the color section of this guideline are chosen for their ability to present underlaying tonal quality without competing with the text and graphics. The best background colors for use in the natural outdoor setting are warm colors in the lighter tonal range. These colors both stand up to the outdoors without calling attention to themselves and provide a good readable base tone.

Background colors can also be a vehicle to indicate a new theme, in the case of multi-themed signs, or to highlight essential but different elements of a panel. This is a subtle way to separate information by simply changing the colors of a particular section behind text and graphics. By placing text and graphics in blocks of color the reader has an

immediate recognition of different narrative voice. This vehicle for separating elements should be limited within the overall panel design. More than a few color changes can be too much and too confusing.

BACKGROUND TEXTURES

Textures can only be apparent texture on any two dimensional presentation. Whether drawings are used, tone down photographs, maps, graphics or graphics made to appear as a surface texture, should be considered tonal information only. In few instances should background texture be considered primary readable information. This device is best used to set the tone for the primary theme and can add dimension to your interpretive presentation.

The decision to use textures should be considered carefully. Foremost is the question whether such a technique will jeopardize readability by appearing too dark in tone or too busy, cluttering the overall effect of the panel.

For best use, the image used to create a background textural effect should be a few degrees darker or lighter than the background color. It should relate to the theme of the sign or be an underlaying instrument to add to the interpretive story. If it does not enhance the message it should be avoided.

SIDEBARS

Sidebars are simply areas set aside graphicly that contain either encapsulated main themed information or an entirely different but related theme as in a multi-themed panel. Maps and detailed information could also be used in sidebars.

Depending on the amount of information contained, sidebars are easily designated or placed with the aid of the design grid.

MONTANA DESIGN GRID

Design grids used as an underlaying organizational device to help the designer organize text and graphic elements into a strong, pleasing composition.

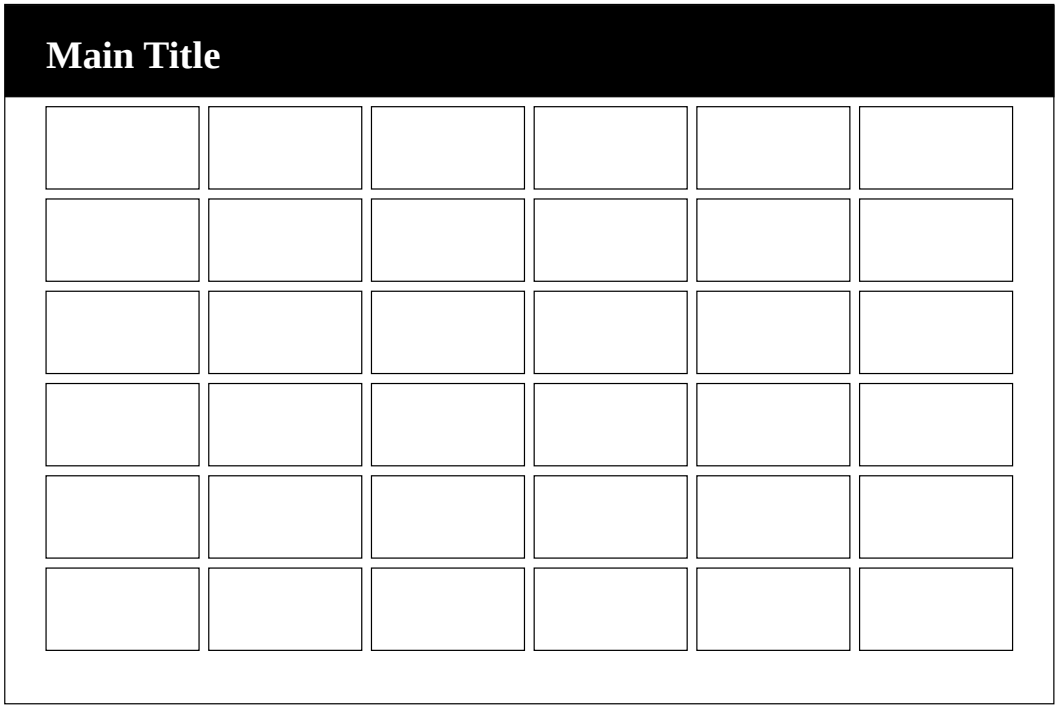
The National Park Service Unigrid System is commonly used across the nation. Sign design that begins with the grid can maintain a tie to other states but add subtle differences to create a unique Montana style.

Use of this system along with other graphic elements will help link each sign with one another visually from one wayside site to another. From the visitors viewpoint, the system provides at a glance a thematic recognition and conveys a sense of order that improves access to information.

The grid consists of horizontal and vertical lines that form 36 small rectangular boxes, or modules. Each module, placed 3 picas apart, is no less than 32 picas in length to accommodate the minimum line length requirement for secondary text.

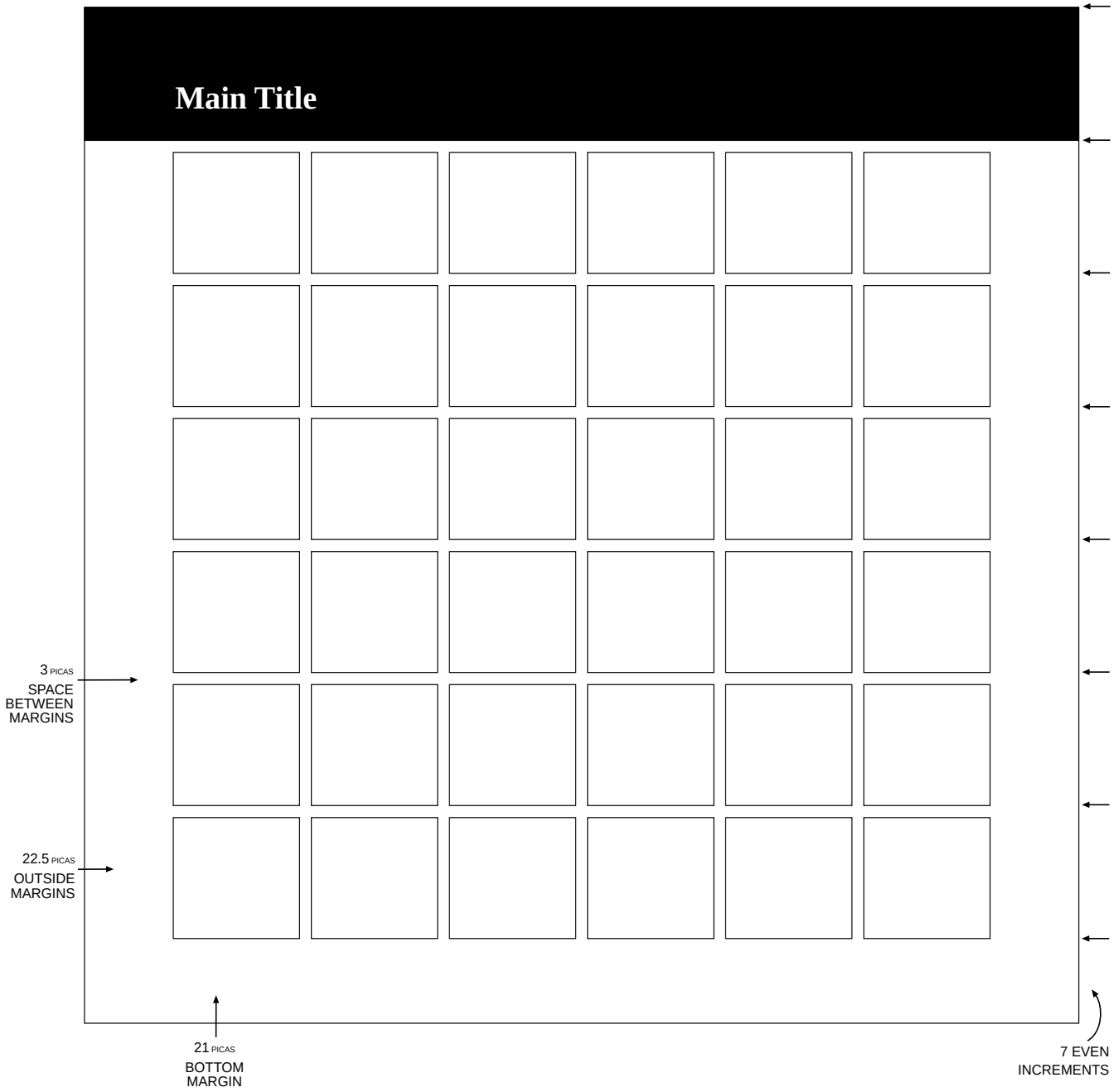
However, as restricted as it may seem this system is only a basis for arranging elements. We shall explore further techniques that will aid the designer in achieving a varied but uniform look.

The following grids and their dimensions are a few of the recommened size formats that could be used.



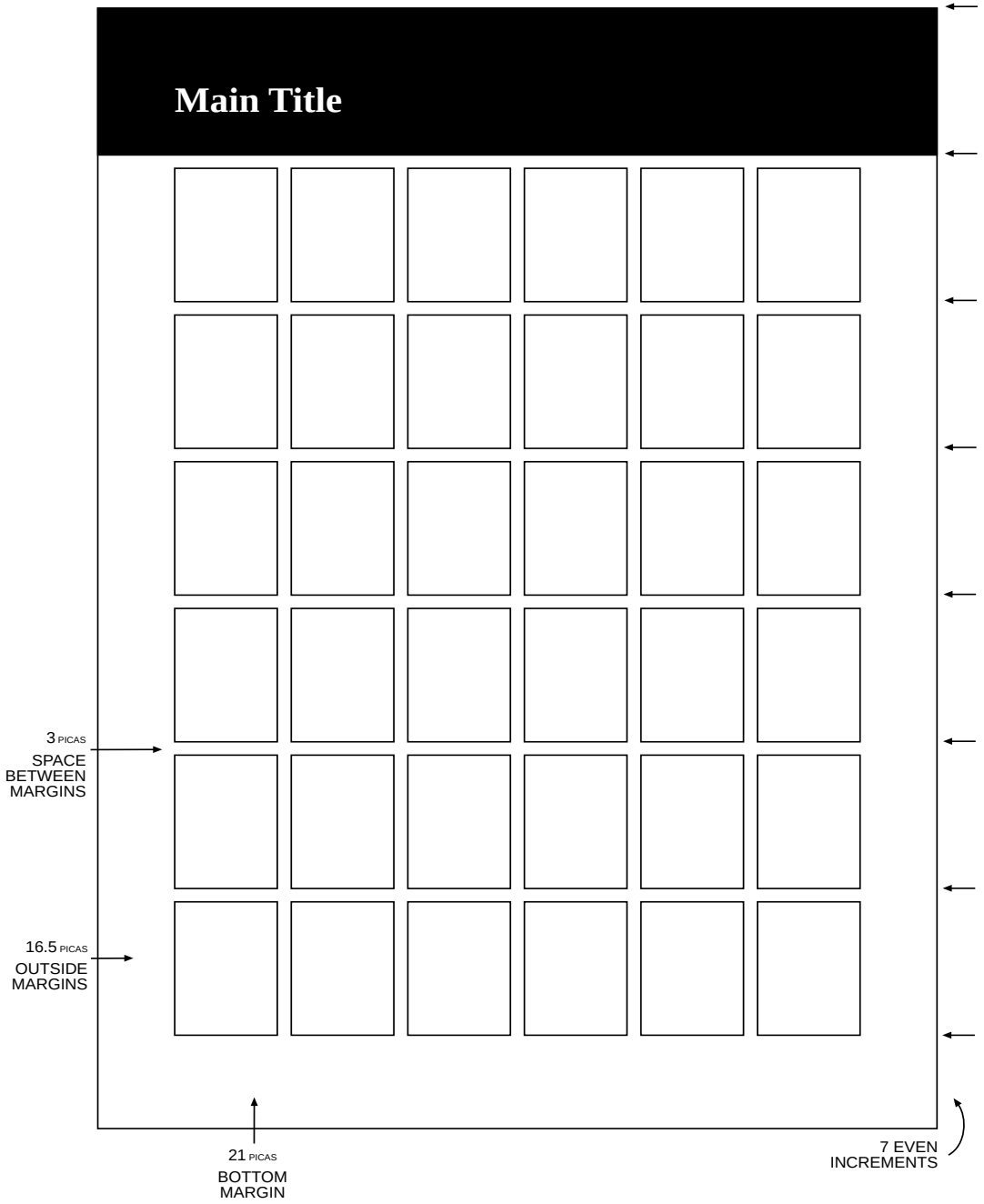
APPENDIX V

42” X 42”

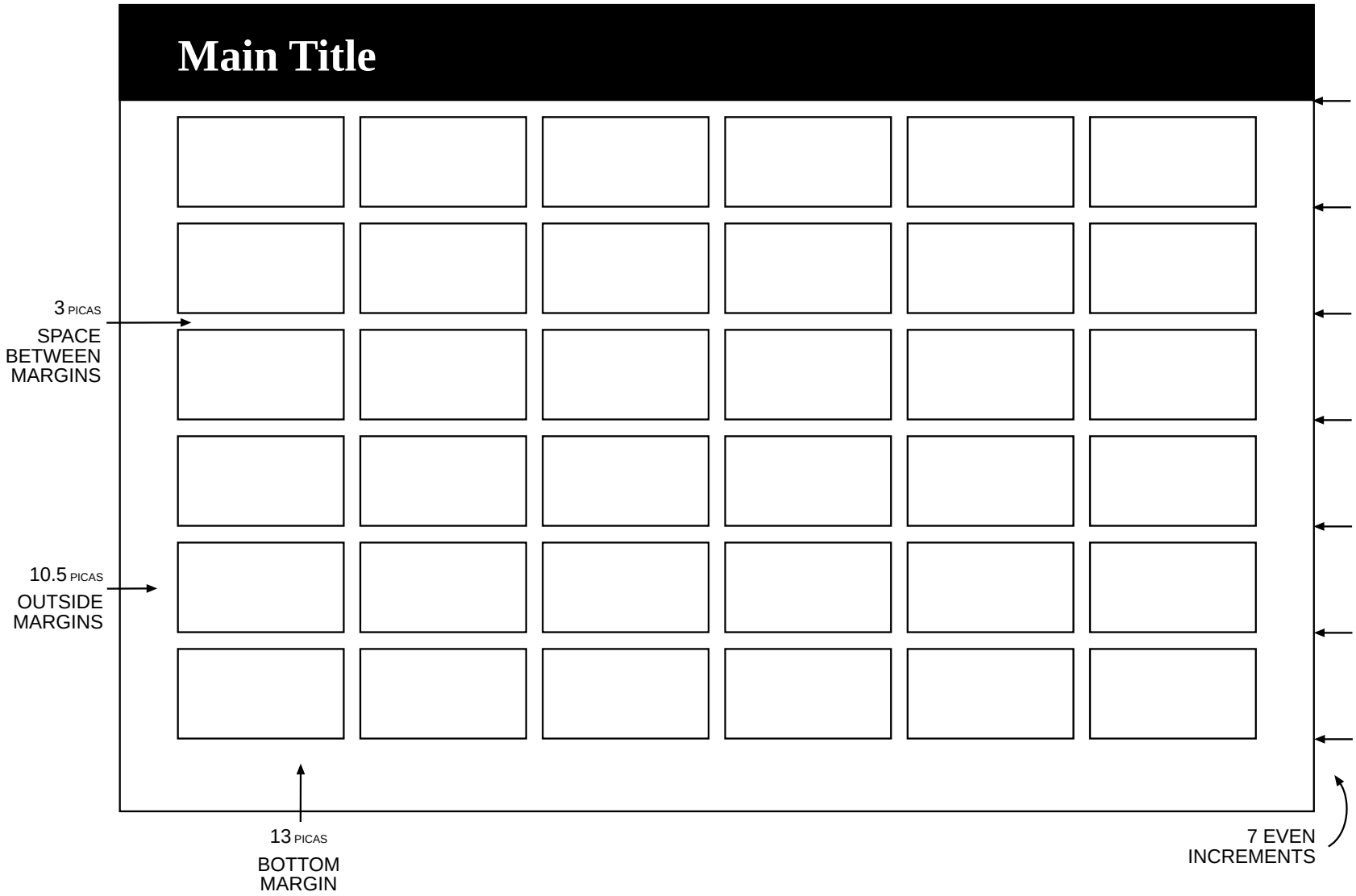


APPENDIX V

30” X 42”



36” X 24”


Main Title
3 PICAS
SPACE BETWEEN MARGINS
10.5 PICAS
OUTSIDE MARGINS
13 PICAS
BOTTOM MARGIN
7 EVEN INCREMENTS

HEADERS

Headers or title bars are the narrow banner at the top of some wayside signs. This device is used extensively by the National Park Service. Here they are represented at the very top of the graphics grid. They normally serve to separate topic from the main body of information and usually contain the title heading and in some cases agency identity and other identification. This structure works well in most cases providing immediate recognition and optimizing readability.

However, they lend themselves to a blocky rigid appearance that leaves little latitude for a more stylized presentation. the decision to use them is up to the individual designer and the demands and dictation of the design and material to be presented.

HEADER VARIATIONS

Different approaches to header use soften their edges and pull them closer visually to the main body of the sign making the header more integral part of the rest of the design.

This can be done by:

- Introducing color and decreasing their contrast with the rest of the panel.
- Breaking into them with graphics.
- Shaping them with an irregular edge.

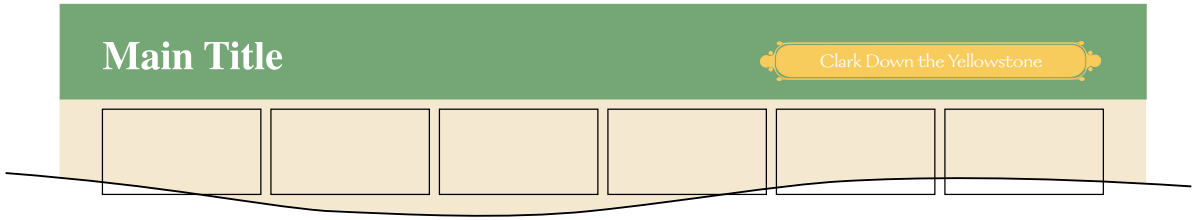
OMITTING HEADERS

If the header is to be omitted all together it may be necessary to move the heading down physically closer to the area of the first row of modules on the grid. Once unconfined from the title bar the heading would most likely need ample space from the uppermost edge of the sign and the rest of the graphics to give it a comfortable, balance look.

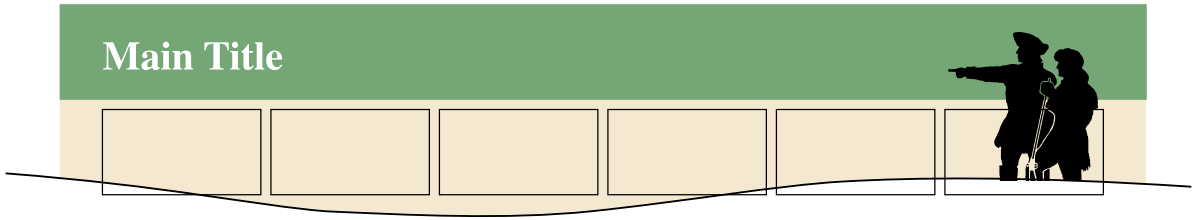
- Add the first row of modules to the header area to accommodate heading only if omitting the title bar completely. This area should not be a separate color from the background color, or a separate band of color in itself.
- Headers can be omitted to accommodate larger point heading type.
- Headers can be omitted to accommodate graphic elements.
- If possible flush heading to the left edge of the first row of modules.

HEADER EXAMPLES

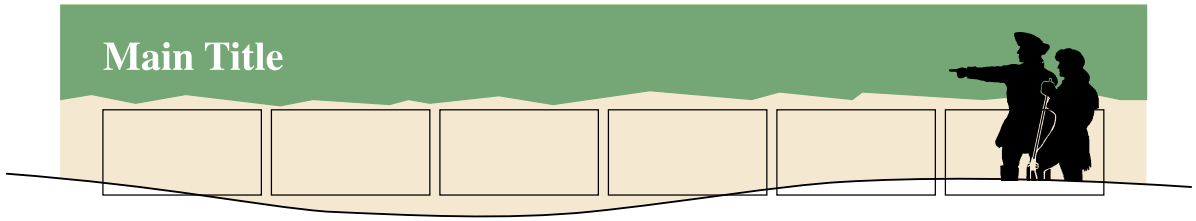
Headers with Color



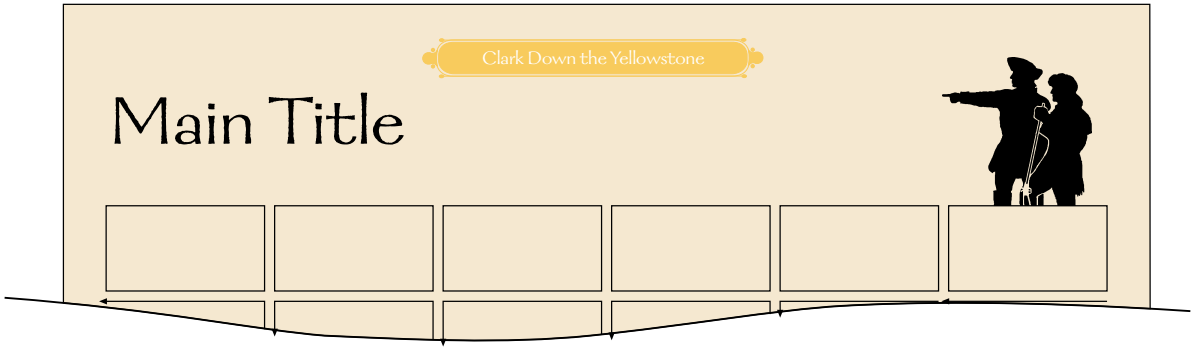
Header with Graphics



Irregular Edge



Omission of Headers



Irregular Edged Header Examples

Irregular edged headers can help reflect the Montana approach in sign design. Headers are useful to help separate topic while holding together a thematic feel to the Montana family of interpretive signs.

Headers may also contain other graphic images or artwork within their boundaries for added effect. They may have graphics placed over the top of them extending into the display area. If the choice is to use artwork, use artwork that will be darker in value than the background color of the rest of the sign to give good contrast to the heading.



Regional Theme Headers

Regional Theme Identifiers and/or Lewis and Clark logo can be incorporated within the header field.

This border can be used in other places





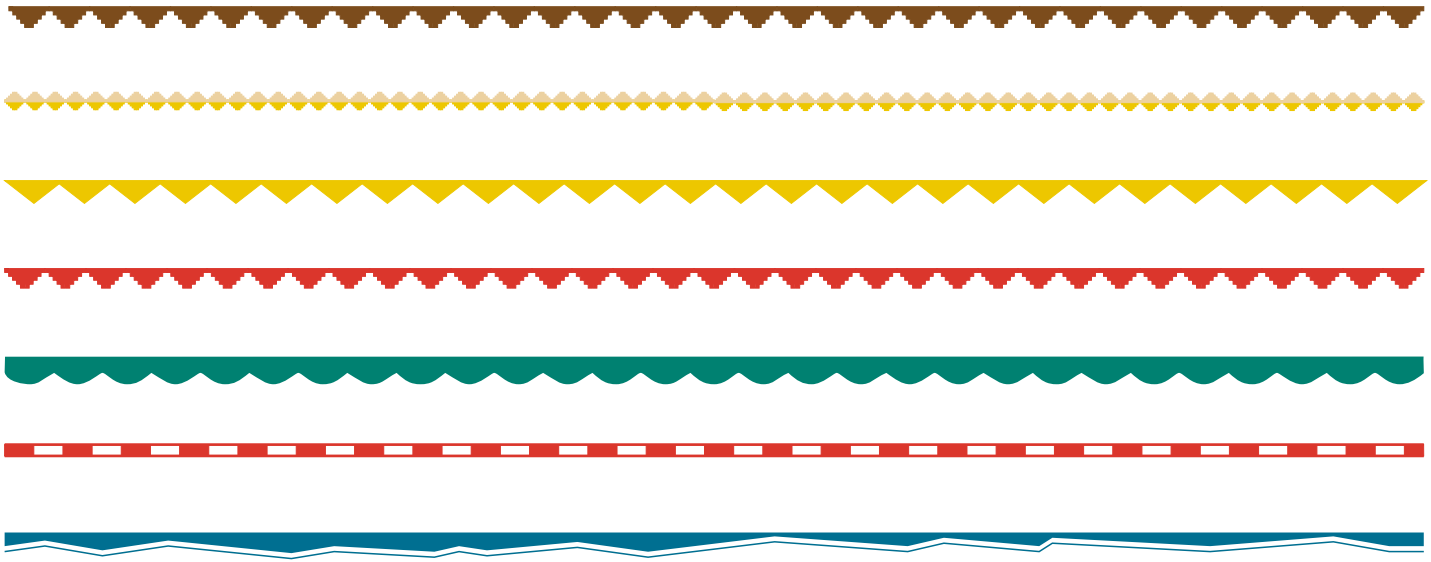
Irregular edge headers works well with natural history topics





Borders

Borders can be created by using only the irregular edge of the header. The thinner version can be used as a horizontal or vertical border and placed beside, under or around other design elements in the interpretive sign composition.

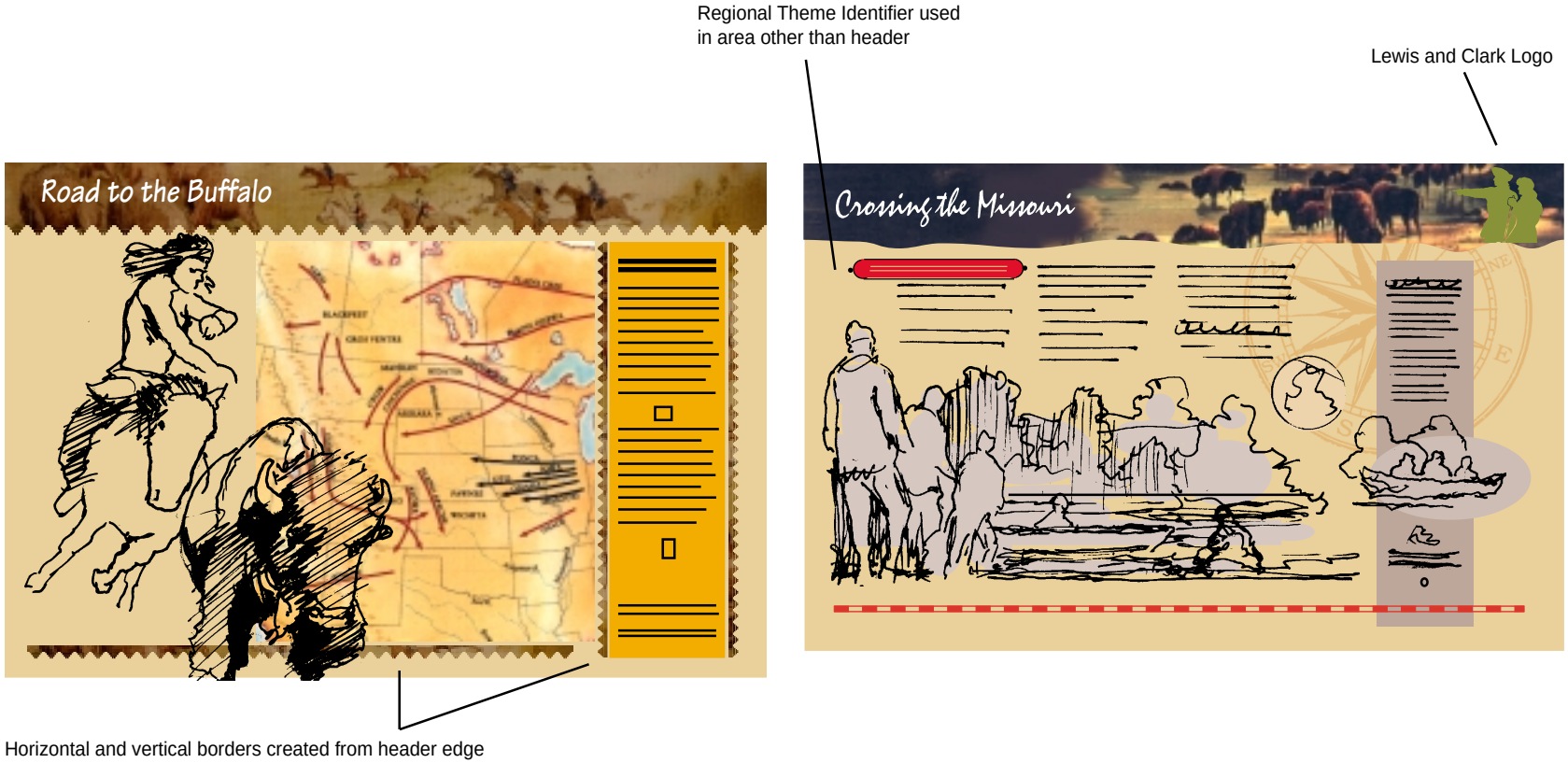


Header edges create separate thinner border



INTERPRETIVE SIGN EXAMPLES SHOWING HEADERS

Examples of interpretive sign using irregular edged header



TYPOGRAPHY

The choice of type font should achieve accessibility without distraction. Legibility coupled with interest will encourage readers.

Typography should be treated as a graphic element creating a balance with other graphic imagery. In some cases functioning as secondary and supporting element to photos and illustrations.

To achieve accessibility without distraction certain variables and simple rules should be considered in regards to choosing and laying out text.

Type Fonts

- A type font is a complete assortment of characters of one type face in one style. Each font usually has several variables — roman, italic, light, regular and bold. It is important to choose a font that has the appropriate variables to best provide enough variation needed in your text, especially if quotes, captions and subheads will be used.

- Build variety by changing size, weight and slant, not by switching type fonts. Except in rare circumstances use no more than two fonts.

- Text that takes more than a few minutes to read calls for a serif face. The tiny end strokes on serif typefaces lead the eye from one letter to another. Serif fonts in normal weight and width are normally more legible than sans serif fonts.

- Levels of information and emphasis can be conveyed by switching fonts. San serif faces can be used effectively for a change of editorial voice and for emphasizing short elements such as subheads and labels.

- Today there are nearly 5,000 published typefaces. However, about four dozen are normally used. Serif typefaces such as Century, Times and Bookman are commonly used with sans serif Helvetica, Futura, and Avant Garde typefaces for wayside interpretive signs. In most cases these fonts are sufficient but tireless use of them may not provide the nuance one may demand. Careful consideration should be made before selecting a font to be used for a series of signs that may include several subjects.

Format

- The choice of type size is related to the reading distance, height and relative importance of information.
- Manageable line lengths are imperative to readability. Research shows that the average reader takes in 3 or 4 words per eye movement and comprehends best when making 2 eye movements per line. Thus, the ideal line length is 7 or 8 words or 45 to 55 characters per line.
- Type sizes and column lengths can be correlated on the grid system.
- Flush left-Ragged right margins are recommended for better readability
- Skipping a line between paragraphs rather than indenting creates smaller text blocks and better readability
- Words are more difficult to read set in all capital letters than in upper and lower case
- Reverse type, type that is white or light in color on black or dark colored background, should be limited.
- Italic type should be avoided for large text blocks.
- Generally it is mor readable to move a whole word down to the next line than to hyphenate
- Awkward text breaks create a distraction. The designer should work with the writer to eliminate solitary words on a line or a solitary line in a column. In some instances a designer can alleviate this problem by slightly condensing the type or by reducing or enlarging the type by fractions of the point size.
- Typeset letters are space differently for different sizes. If at all possible, type should be set at the actual size of the final sign, not reduced or enlarged from a different size.

The following pages are examples of type specifications that are proven standards for optimum readability for outdoor wayside interpretive panels.

TYPE SPECIFICATIONS – MAIN TITLE

96 point Times Roman or Helvetica Bold. Flush left, upper and lower case, one line, maximum of 4 words.

Sample Main Title

Sample Main Title

TYPE SPECIFICATIONS – MAIN TEXT

36 point Times Roman, 38 point leading, (for upright panels use 40 point type with 44 point leading).

Sample main text typeset in 36 point Times Roman with 38 point leading. Flush left, ragged right. Upper and lower case, no hyphenation.

Two columns wide, maximum line length of 67 picas. Insert one line space between paragraphs. Do not indent paragraphs.

TYPE SPECIFICATIONS – SECONDARY TEXT AND SUBTITLE

SECONDARY TEXT
24 point Times Roman, 26 point leading, (for upright panels use 28 point type with 30 point leading).

Sample secondary text typeset in 24 point Times Roman with 26 point leading. Flush left, ragged right. Upper and lower case, no hyphation.

One column wide, maximum line length of 32 picas. Insert one line space between paragraphs. Do not indent paragraphs.

SUBTITLE
36 point Helvetica Regular, Bold and Black, flush left, ragged right, upper and lower case.

Sample Subtitle
Sample Subtitle
Sample Subtitle

TYPE SPECIFICATIONS – CAPTION

CAPTION
24 point Times Roman Italic, 26 point leading, (for upright panels use 28 point type with 30 point leading).

Sample caption typeset in 24 point Times Roman Italic with 26 point leading, flush left, ragged right. Upper and lower case, no hyphation.

One column wide, maximum line length of 32 picas. Insert one line space between paragraphs. Do not indent paragraphs.

TYPE SPECIFICATIONS – MISCELLANEOUS

TRAIL AND ADMINISTRATION IDENTIFICATION
24 point Helvetica Bold, 26 point leading, (for upright panels use 28 point type with 30 point leading), Flush left, ragged right, upper and lower case, no hyphenation, one column wide, maximum line length of 32 picas.

Sample Trail and Administrative Identification

MAP LABELS LARGE
56 point Helvetica Bold.
Upper and lower case

Map Labels Lg

MAP LABELS MEDIUM
36 point Helvetica Bold, 38 point leading, (for upright panels use 40 point type with 44 point leading), Upper and lower case.

Map Labels Medium

MAP LABELS SMALL
24 point Helvetica Bold, 26 point leading, (for upright panels use 28 point type with 30 point leading), Upper and lower case.

Map Labels Small

MAP LABELS EXTRA SMALL
16 point Helvetica Bold,
Upper and lower case.

Map Labels Extra Small

ALTERNATIVE TYPE FONTS

Alternative type fonts can create subtleties in design that can enhance the overall feel of a wayside interpretive sign. Whether used as a slightly different style for text, subtitles and labels or as embellishment, quotes or headings they provide a less generic look and open up possibilities that can broaden the design avenues for a more creative approach.

There is no hard fast rule when it comes to font styles and their compatibility to theme. Deciding what typeface is right calls for judgments beyond the scope of this guideline. It is an aesthetic design decision that is more a "Feel" than Rule. **Fonts that harken to a period of history or typify a theme may or may not be compatible with other fonts chosen or fit well within the overall design. Many of them have too much character and draw excessive attention to themselves. A balance must be struck that takes a professional eye and sensibility for design.**

Type Fonts that are unusual, scripted, or antique, if used in scale, with sensitivity to the overall design of the panel or interpretive theme can be in themselves an element of design bringing to play a unique quality of their own. Used as an embellishment, as in the case of illuminated letter forms and Initial caps, or script fonts for quotes, these touches can bring a sense of thematic quality to the design very much like any other design element.

Many Antique fonts have been converted to digital format, however specifying typefaces can be confusing when different manufacturers give different names to similar fonts. This is true even with standard, well used fonts. The major drawback in using unusual or antique fonts is the difficulty in finding them for universal use. Sources are limited and matching font styles is sometimes challenging.

ALTERNATIVE TYPE FONTS

Lewis & Clark

ITC Officina Serif Book

A B C D E F G

Snell Roundhand Script

Lewis & Clark in Montana

Galahad Regular

ABCDEFGHIJKLMNOPQRSTUVWXYZ&!

Old Latin Condensed

ABCDEFGHIJKLMNOPQRSTUVWXYZ&

abcdefghijklmnopqrstuvwxvz

Melior Semi Bold Condensed

ALTERNATIVE TYPE FONTS

Galahad Regular — used for headings, main and secondary text. Set for example here at 28 points on 31 points leading, 45 pica line length.

Galahad Regular, keystroke Italic— used for captions or quotes. Set for example here at 28 points on 31 points leading, 45 pica line length.

Galahad Regular, keystroke Bold — used for headings, main and secondary text. Set for example here at 28 points on 31 points leading, 45 pica line length.

ALTERNATIVE TYPE FONTS

Albertus MT Light — used for headings, main and secondary text. Set for example here at 24 points on 30 points leading, flush left, ragged right 35 pica line length.

Albertus MT Regular — used for headings, main and secondary text. Set for example here at 24 points on 30 points leading, flush left, ragged right 35 pica line length.

X HEIGHT

Due to the x height or height of lower case letters in relationship to their ascenders and descenders certain fonts appear larger or smaller in size. Often in the case of larger x height letterforms extra leading is required for best readability.

ALTERNATIVE TYPE FONTS

Tekton Regular — Best used for headings, subheads, captions, main and secondary text. Often the uniqueness of this font requires it to be used solely without other fonts. Set for example here at 23 points on 25 points leading, 35 pica line length.

Tekton Bold — Also Tekton Bold Oblique available in this font. A good choice for headings and subheads. Set for example here at 23 points on 25 points leading, 35 pica line length.

TEKTON

Some fonts lend themselves to themes more than others. It should be noted that fonts of this type usually stand alone and have to be carefully used in conjunction with other type faces. Tekton is an often used font for interpretive signs and is a good font to use with native and natural themes.

Vag Rounded Light — A good alternative san serif type face used for map labels, subtitles and secondary text. Set for example here at 28 points on 32 points leading, 35 pica line length.

Vag Rounded Thin
Vag Rounded bold
Vag Rounded Black

COLOR SPECIFICATIONS

Selection of color and color usage is a very important design element. Keeping to a specific color or field of colors helps identify signs along the Lewis and Clark Interpretive Corridors.

Here we suggest an assortment of colors that might be used for interpretive signs. For our purpose, we have chosen to use graphic arts industry standard, PANTONE® MATCHING SYSTEM (for uncoated paper), a universal color identification system normally used for printing inks. Since no wayside sign will be printed in lithographic ink, we use this method in our guideline for examples only. The manufacturing of signs is a varied science whose fabrication methods vary from porcelain glaze to electronic, color plotted, embedment signs.

Colors may vary slightly from one method to the other. However, fabricators are specialist in matching colors. If provided color chips of your selection, either PANTONE® or standard paint manufacture color chips, they can reproduce colors with excellent accuracy.

The colors chips presented on this page are not true PANTONE® MATCHING SYSTEM colors. Colors vary widely with each method of representing them. It is suggested that you consult a PANTONE® Color Selector to select the true colors identified on the next page.



SOME SUGGESTED PANTONE® COLORS

Blue	Green	Red	Yellow	Orange	Brown	Purple	Backgroud Colors
PMS:	PMS:	PMS:	PMS:	PMS:	PMS:	PMS:	PMS:
534	350	484	484	129	470	259	Cool Gray 1
659	5747	486	113	130	471	2607	Warm Gray 1
660	5757	1797	114	142	472	500	134 Orange
661	5767		115	716	483	666	141 Orange
662	5777		127	717	484	667	155 Tan
	5787		128	718		668	607 Yellow
	5797					688	614 Yellow
							621 Green
							642 Blue
							652 Blue
							726 Brown
							4545 Parchment
							5513 Blue
							5523 Blue
							5595 Green



SIGN CLASS & TYPES

Signs fall in two classes:

CLASS: I Upright Mounts

II Angled Mounts

and in four types that are determined by the amount of information to be conveyed under two separate situations; whether one is traveling in an automobile or on foot.

TYPE: A. from a moving automobile

B. from a parked automobile

C. on foot reading single sign

D on foot reading kiosk

Upright and Angled Mounts

Mounted signs are either placed upright or at a low angle facing upward toward the reader. Typically, signs that are meant to be read from automobiles are vertical while angled signs are to be read while standing or sitting.

Signs that are read from a parked automobile at a wayside exhibit should impart only the essential interpretive information. No more than 70 words set in larger type sizes are recommended for best readership. Signs to be read from a moving automobile should have no more than 10 to 12 words. Usually signs of this type are large in format, wood routed, metal or fiberglass with little or no graphics.

Signs designed for foot or wheelchair traffic can be read more leisurely. They can be more complex in their presentation both graphically and in the amount of information. Type C and D signs provide the best opportunity to impart the greater message and provide the best possibilities for interpretive sign panels.

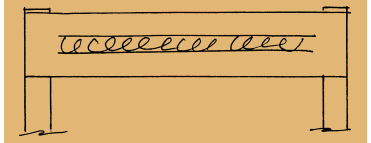
Sign Locations

Upright signs can be placed in nearly any situation. Angled signs, are used most effectively as interpretive signs. They can be used singularly or grouped in combination with an upright, either stand alone, or attached to an upright kiosk structure.

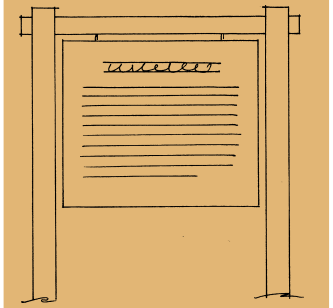
CLASS I
- Roadside
- Roadside Pullout
- Rest Area
- Recreation Area Parking
- Information Center
- Trailhead
- Trailhead Parking

CLASS II
- Wayside Exhibit
- Rest Area
- Vista
- Along Trail
- Information Center
- Historic Site

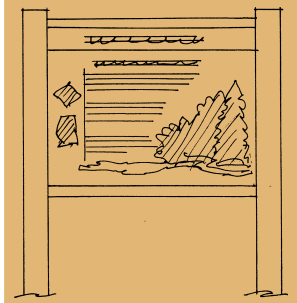
CLASS I
– UPRIGHT SIGNS



Type A
– Read from moving aotomobile



Type B
– Read from parked automobile

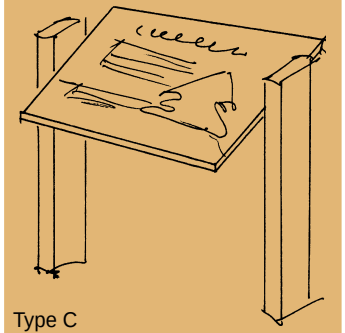


Type C
– Single upright, read on foot

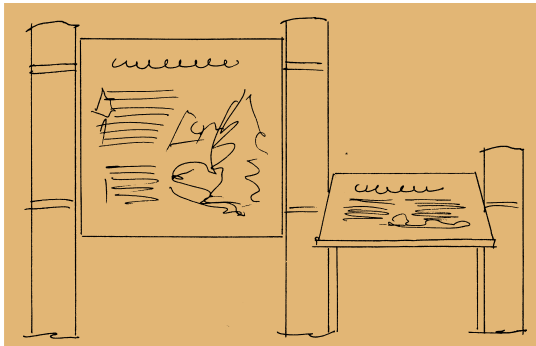


Type D
– Multi-sign kiosk, read on foot

CLASS II
– ANGLED SIGNS

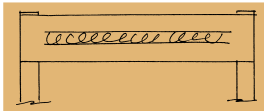
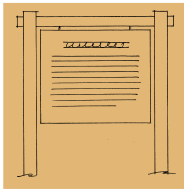


Type C
– Single angled mount, read on foot

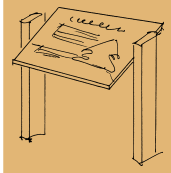
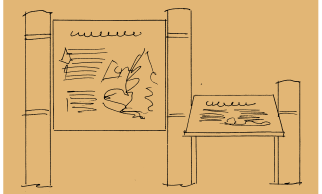


Type D
– Multi-sign kiosk, read on foot

SUMMARY OF CLASS & TYPES

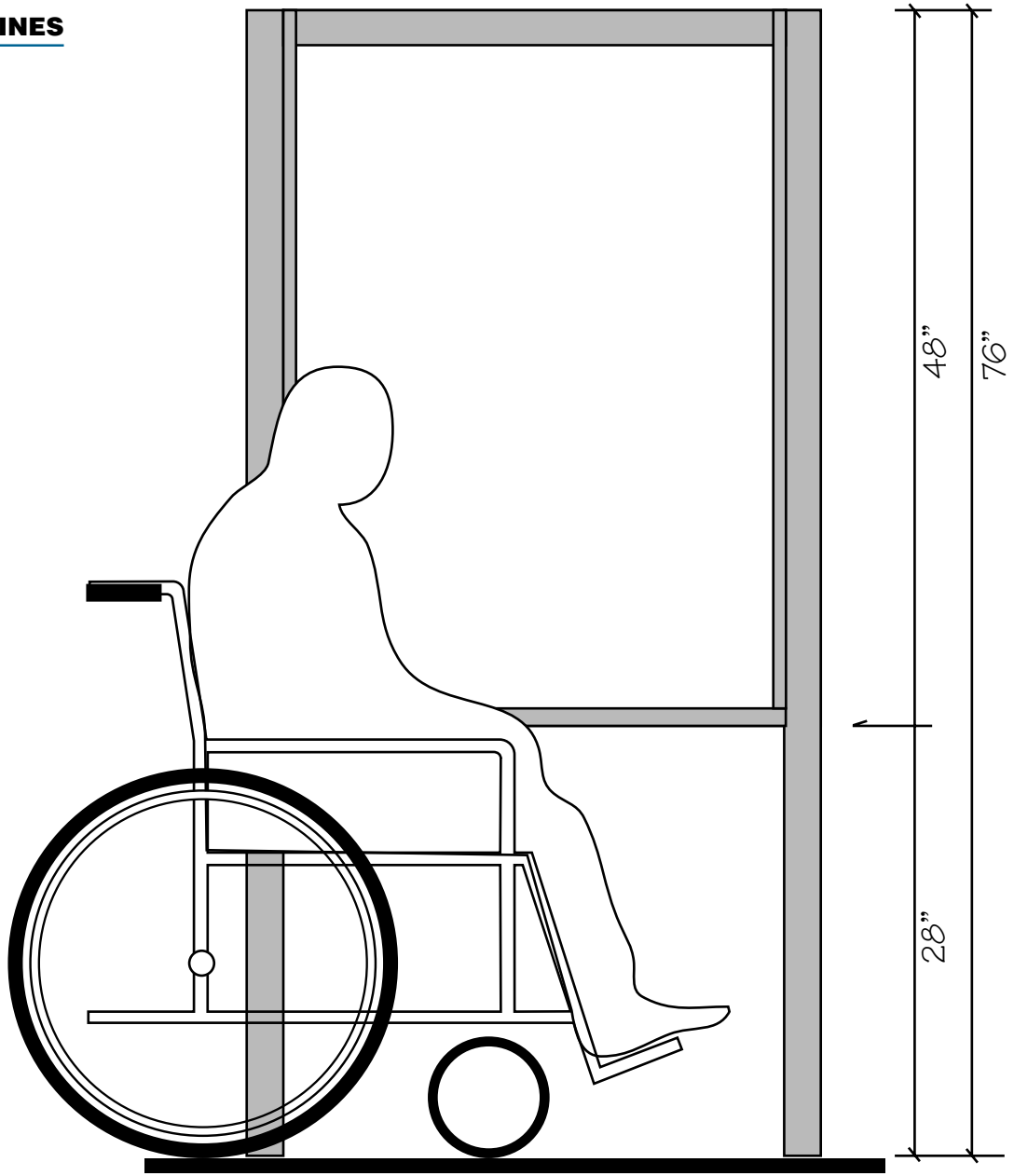
CLASS I – UPRIGHT	TYPICAL LOCATION	SIGN GRAPHICS	CONSTRUCTION	FAMILY OF SIGNS
TYPE A  Roadside sign to be read from moving or pausing automobile	• Beside low standard roads in safe place for pausing	• Smallest font size 4 inches • 10 - 12 words maximum • Minimal graphics • Logo optional	• Wood routed • Fiberglass • Metal	• Introduction Sign • Markers (Trail Blazers)
TYPE B  Roadside sign to be read from inside automobile while parked	• Pullout beside road (placed in a safe location) • Rest area • Recreation area parking	• Smallest font size 2 inches • 50 to 70 words maximum • Simple line art	• Rustic routed wood • Paint	• Introduction Sign • interpretive sign
TYPE C  Single upright to be read on foot	• Trailhead • Rest area • Information Center • Ranger Station • Recreation Area	• Heading font size: 2-4 inches • Text font size: 36-60 pt. • 24 pt. minimum font size • Single or multi-themed • 50-70 words max. per theme • Complex Graphics	• Rustic wood bases • Design fits setting • Design works well with other features • Locate away from vehicle safe zone	• Interpretive Sign • Orientation Sign
TYPE D  Multi-sign kiosk to be read on foot	• Trailhead parking • Rest area • Information Center • Ranger Station • Recreation Area	• Heading font size: 2-4 inches • Text font size: 36-60 pt. • 24 pt. minimum font size • Single or multi-themed • 50-70 words max. per theme • Complex Graphics • Can include Orientation & maps	• Rustic wood bases • Design fits setting • Design works well with other features • Locate away from vehicle safe zone	• Interpretive Sign • Orientation Sign

SUMMARY OF CLASS & TYPES

CLASS II – ANGLED	TYPICAL LOCATION	SIGN GRAPHICS	CONSTRUCTION	FAMILY OF SIGNS
TYPE A				
NONE				
TYPE B				
NONE				
TYPE C				
 Wayside exhibit to be read on foot. Displayed singularly or clustered	• Vista House • Recreation area • Along major trail* • Information Center * Usually placed where there is something to do or see	• Heading font size: 48 - 80 pt. • Text font size: 30 - 36 pt. • Single or multi-themed • 50-70 words max. per theme • Complex Graphics	• Rustic wood or stone bases • Simple metal bases • Design fits setting • Design works well with other features • Sign Panel manufacture: Many materials available • Locate away from vehicle safe zone	• Interpretive Sign
TYPE D				
Wayside exhibit in combination with upright to be read on foot 	• Trailhead parking • Rest area • Information Center • Ranger Station • Recreation area	• Heading font size: 48 - 80 pt. • Text font size: 30 - 36 pt. • Single or multi-themed • 50-70 words max. per theme • Complex Graphics • can be mounted with upright Orientation sign	• Rustic wood or stone bases • Design fits setting • Design works well with other features • Sign Panel manufacture: Many materials available • Locate away from vehicle safe zone	• Interpretive Sign

ACCESSIBILITY

The primary concideration for mounting signs are accessability and impact on the setting. Here we address the basic requirements for accessability by Mobility-Impaired Visitors for both upright and low-profile exhibits.



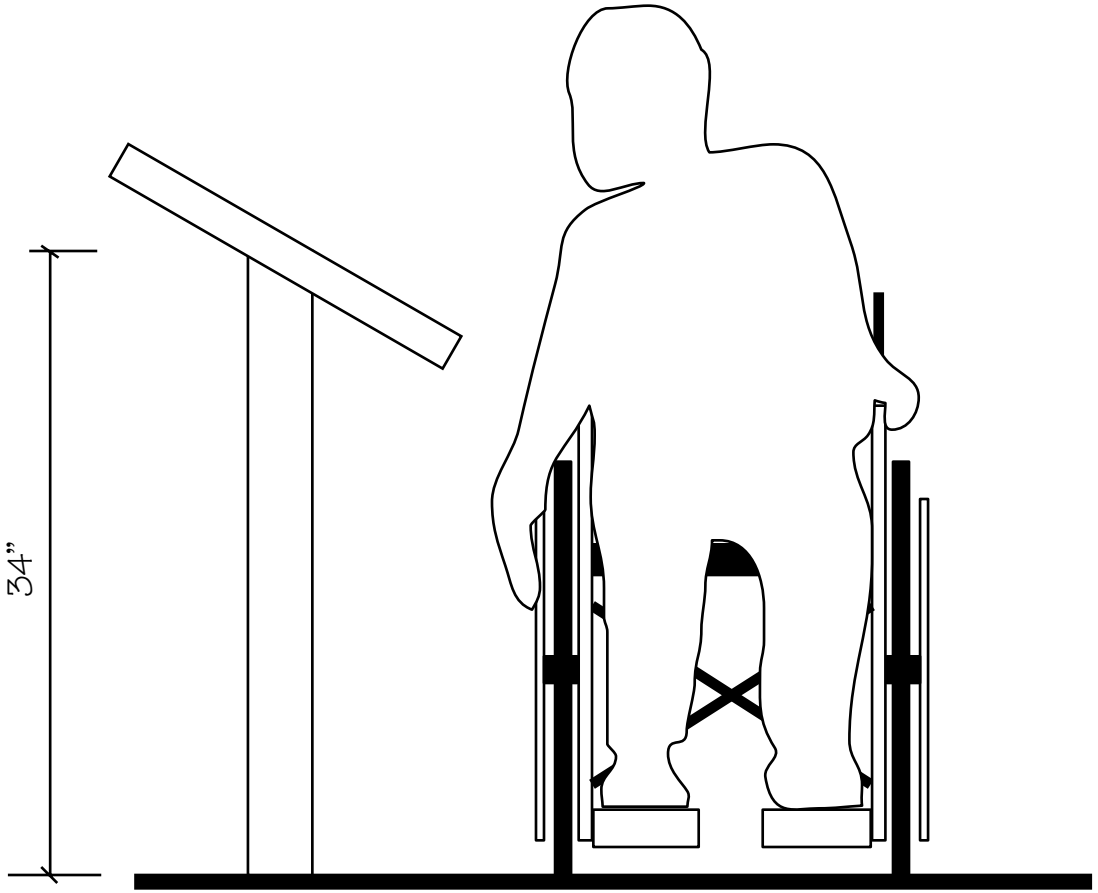
Bulletin board and vertical exhibits

The recommended height from the bottom of the panel is 24 to 28 inches, depending on panel size.

ACCESSIBILITY

Low-profile exhibits

The recommended height from the bottom of the panel is 30 to 34 inches. Panel angle is 30 degrees for preferred readability.



FABRICATION

Many processes and materials are available to produce a finished wayside exhibit sign panel. There are advantages and disadvantages with each. There are no destruction proof materials, however some are more suited than others depending on the demands of their particular use and location. Determining the right choice for your specific site and the message to be presented requires a number of considerations.

- Compatibility with the setting
- The history of vandalism in the area
- Maintenance required for the material
- The graphic color range and resolution required
- Type and amount of visitors
- Amount of security at the site
- Life expectancy of the material
- Durability, scratch & dent resistance
- Weatherability, UV protection
- Costs, value for the money

VALUE

Value for the money depends on how well you have considered the material specifications with the demands of the location.

In many instances, when signs are located in high vandalism areas or exposed to long periods of direct sunlight, choosing replaceable formats would be desirable. Ordering several copies of signs at the time of the initial order to install in the future may be more cost effective. Expensive, color-fast materials on the other hand, if installed in a well monitored area, can require less maintenance and be more cost effective.

Careful consideration at the onset will provide the best choice for the costs.

MATERIALS

Of the many fabrication processes available three are preferred.

- Porcelain Enamel
- Fiberglass Embedded
- Etched and Anodized Aluminum

Although each have their advantages and disadvantages, the main reason these three have been preferred is because of their ability to hold detailed graphic images. Both porcelain and fiberglass embedded can be fabricated in color. Images can not be reproduced in color with etched anodized aluminum.

There are many innovations in material and new techniques, especially in the embedment and lamination processes. Computer generated art has moved the industry forward by leaps and bounds. Artwork that could only be silkscreen on archival-quality paper and embedded in fiberglass with photos tipped in can now be plotted in detail and printed electronically in vibrant color with inks and UV coating that can hold up to years of outdoor use.

PVC and plastic resin backed laminated products have moved forward as well. These products are cost effective and flexible in their usage.

It is well worth the effort to research this ever changing industry to find a product that suits the demands of the location and budget.

MATERIALS RATING

Sign Material	Scratch Resistance	Impact Resistance	Weather Resistance	Replacement Cost	Graphic Range	Required Maintenance	Years of Service	Relative Cost	Overall Rating
Porcelain enamel on steel (glass)	Very Good	Very Good	Very Good	High	Very Good	Low	20+	Very High	Very Good
Fiberglass Embedded	Good	Very Good	Very Good	Very Low	Very Good	Low	10+	High	Very Good
Baked enamel on metal (paint)	Poor	Good	Fair	High	Fair	Medium	5+	Medium	Fair
Photo processed aluminum	Good	Good	Very Good	Medium	Good	Low	10+	High	Good
Silkscreened or painted aluminum	Poor	Poor	Good	Medium	Fair	Medium	5+	Medium	Fair
Cast aluminum	Fair	Fair	Very Good	High	Poor	Low	20+	Medium	Poor

MATERIALS RATING

Sign Material	Scratch Resistance	Impact Resistance	Weather Resistance	Replacement Cost	Graphic Range	Required Maintenance	Years of Service	Relative Cost	Overall Rating
Cast bronze or brass	Very Good	Very Good	Very Good	High	Poor	Low	40+	High	Good
Engraved or etched stainless steel	Fair	Good	Good	Medium	Fair	Low	10+	Medium	Poor
Routed or sandblasted wood (painted)	Poor	Poor	Poor	High	Fair	High	5+	Medium	Fair
Engraved plastic	Poor	Fair	Fair	Low	Poor	Low	5+	Low	Fair
Rear screen printed plastic	Fair	Fair	Good	Medium	Good	Medium	5+	Medium	Good
UV laminated phenolic resin	Good	Very Good	Very Good	High	Very Good	Low	10+	High	Very Good